

Application No. 10/776,
Amendment dated July 10, 2006
Reply to Office Action of January 9, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended). An automatic tissue sampling apparatus for use with a biopsy needle set of the kind including an inner needle having a first hub disposed at one end and a cutting point disposed on an opposite end with a tissue holding notch positioned between the cutting point and the first hub and an outer cannula having a second hub at one end and a cutting point disposed at the opposite end, the automatic tissue sampling apparatus comprising:

a housing having a forward portion adjacent a forward end and a rearward portion adjacent a rearward end with a transverse wall disposed between said forward portion region and said rearward portion region;

a rotatable center shaft disposed within said housing along a longitudinal axis of said housing;

a rearward carrier assembly configured to receive and carry one of the needle hubs, said rearward carrier assembly including

a rearward carrier mounted on said center shaft in said rearward portion and movable along a path substantially parallel to said longitudinal axis of said housing between a first resting position and a first cocked position;

a rear spring member positioned within said rearward portion region of said housing and biasing said rearward carrier forwardly toward said first resting position; and

a rearward retaining member configured to releasably retain said rearward carrier in the first cocked position, said rearward retaining member releasable in response to a trigger operatively engaged to said rearward retaining member;

a forward carrier assembly configured to receive and carry the other of the needle hubs, said forward carrier assembly including

a forward carrier mounted on said center shaft within said forward portion and movable along a path substantially parallel to a longitudinal axis of said housing between a second resting position

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and a second cocked position;

a front spring member positioned within said forward portion
~~region~~ of said housing and biasing said forward carrier forwardly
toward said second resting position; and

a forward retaining member configured to releasably retain said
forward carrier in the second cocked position, said forward retaining
member releasable in response to said rearward carrier moving from
the first cocked position to the first resting position; and

a two stage cocking assembly for moving one of said carriers to the
corresponding cocked position with a first actuation of said cocking
assembly and then moving the other of said carriers to the corresponding
cocked position with a second actuation of said cocking assembly, the
cocking assembly having

a cocking lever disposed externally on a lever wall of said
housing;

a force transmission assembly including a forward cocking
beam having an opposite end and a first end pivotally attached to said
forward end of said housing ~~and an opposite end~~, a rearward cocking
beam having a first end and an opposite end, and a beam bearing
engaged to said opposite ends of said forward cocking beam and said
rearward cocking beam, each of said cocking beams forming an angle
with said lever wall of said housing, said beam bearing movable
against said cocking lever between a lever open position with the
cocking beams in a retracted position and a lever closed position with
the cocking beams in an extended position wherein said angle is
smaller when said cocking beams are in the extended position relative
to when said cocking beams are in the retracted position;

a cocking slider having a forward end, a rearward end, a center
portion, and a beam-cocking slider connector forward of said center
portion, said beam-cocking slider connector pivotally engaged to said
first end of said rearward beam and movable along a path in response
to actuation of said cocking lever, said cocking slider having a length
sufficient to span a distance between said forward carrier and said
rearward carrier, said cocking slider disposed between said cocking
beams and said carriers to transmit force from said beams to said
carriers to move said carriers from the corresponding resting position
to the corresponding cocked position,

said cocking slider having a forward engagement member

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releasably engageable to said forward carrier and a rearward engagement member releasably engageable to said rearward carrier, wherein upon actuation of said cocking lever, said forward end of said cocking slider tips toward said forward carrier to align said forward engagement member with said forward carrier when said forward carrier is in said second resting position, and alternately, said forward end rests upon said forward carrier slider and said rearward end of said cocking slider tips towards said rearward carrier to align said rearward engagement member with said rearward carrier when said forward carrier is in said second cocked position.

Claim 2 (Original). The automatic tissue sampling apparatus of claim 1, wherein said lever wall is disposed between said forward end and said rearward end of said housing and said cocking lever is laterally supported from said lever wall.

Claim 3 (Currently Amended). The automatic tissue sampling apparatus of claim 1, further comprising a trigger operatively engaged to said rearward retaining member and disposed on one of said forward end and said rearward end of said housing, and a safety knob positioned outside one of said forward end and said rearward end of said housing, said safety knob positionable to a safety-on position to block operation of said trigger.

Claim 4 (Original). The automatic tissue sampling apparatus of claim 3 further comprising a lever hook disposed on said cocking lever, a lever latch engageable to said lever hook and extending from said lever wall, said lever latch movable between an engaged position and a released position, and a safety cam movable in response to movement of said safety knob, said safety cam having a major dimension sufficient to block movement of said lever latch from the engaged position to the released position.

Claim 5 (Original). The automatic tissue sampling apparatus of claim 4 further comprising an elongated lever latch linker positioned parallel to said longitudinal axis and connecting said lever latch to a lever latch pusher disposed in said rearward portion of said housing, said lever latch pusher biased in the forward direction and movable in a rearward direction in response to movement of said rearward carrier to the first cocked position.

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Claim 6 (Original). The automatic tissue sampling apparatus of claim 3 further comprising a second trigger disposed on the other of said forward end and said rearward end of said housing, said trigger and said second trigger operably connected by an elongated trigger linker.

Claim 7 (Original). The automatic tissue sampling apparatus of claim 4 wherein said safety cam is fixed to said center shaft and said safety knob is operable to rotate said center shaft and said safety cam.

Claim 8 (Original). The automatic tissue sampling apparatus of claim 7 wherein said safety knob includes a skirt member disposable between said trigger and said one of said forward end and said rearward end to prevent operation of said trigger when said safety knob is in the safety-on position.

Claim 9 (Currently Amended). The automatic tissue sampling apparatus of claim 4 further comprising a stop member fixed to said center shaft, said stop member having a projection facing one of said forward carrier and said rearward carrier and providing an alternate resting position to the one of said forward carrier and said rearward carrier, said alternate resting position selectable by rotating said safety knob.

Claim 10 (Original). The automatic tissue sampling apparatus of claim 3 further comprising an elliptical member fixed to said center shaft, said elliptical member having a minor dimension configured to allow said cocking slider to contact said forward carrier and said rearward carrier and a major dimension configured to push said cocking slider away from said forward carrier and said rearward carrier, said major dimension of said elliptical member contacting said cocking slider when said safety knob is in a safety-off position.

Claim 11 (Cancelled).

Claim 12 (Cancelled).

Claim 13 (Cancelled).

Claim 14 (Cancelled).

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Claim 15 (Cancelled).

Claim 16 (Cancelled).

Claim 17 (Cancelled).

Claim 18 (Currently Amended). The automatic tissue sampling apparatus of claim 1 ~~13~~, wherein said forward engagement member defines a hook for engaging said forward ~~first~~ carrier to pull said forward ~~first~~ carrier as said cocking slider slides rearward.

Claim 19 (Currently Amended). The automatic tissue sampling apparatus of claim 18, wherein said rearward engagement member defines a notch for engaging said rearward ~~second~~ carrier to push said rearward ~~second~~ carrier as said cocking slider slides rearward.

Claim 20 (Currently Amended). The automatic tissue sampling apparatus of claim 1 ~~13~~, wherein said rearward engagement member defines a notch for engaging said rearward ~~second~~ carrier to push said rearward ~~second~~ carrier as said cocking slider slides rearward.

Claim 21 (Cancelled).

Claim 22 (Cancelled).